

## Claims

What is claimed is:

1. A method for downlink communication with a downhole tool having a mud-powered downhole motor, comprising:  
    receiving a sensor signal related to a rotational speed of a rotor in the mud-powered downhole motor; and  
    interpreting the sensor signal to derive a downlink signal.
2. The method of claim 1, wherein the receiving the sensor signal comprises determining a rotational speed of at least part of a bottom hole assembly.
3. The method of claim 1, further comprising varying a mud flow rate from a surface.
4. The method of claim 1, further comprising stopping a rotation of a drill string at a surface.
5. The method of claim 1, further comprising lifting a drill bit off a bottom of a borehole.
6. The method of claim 1, further comprising controlling a downhole equipment based on the derived downlink signal.
7. The method of claim 1, wherein the interpreting the sensor signal comprises computing at least one selected from a magnitude of the sensor signal, a rate of change of the sensor signal, and a temporal pattern of the sensor signal.
8. The method of claim 1, wherein the mud-powered downhole motor comprises a positive displacement mud motor.

9. The method of claim 1, wherein the mud-powered downhole motor comprises a drilling mud turbine.
10. A downlink communication system for a downhole tool, comprising:
  - a mud-powered downhole drilling motor disposed in the downhole tool;
  - at least one sensor disposed in the downhole tool for making measurements related to a rotational speed of a rotor in the mud-powered downhole motor; and
  - an electronics package operatively coupled to the at least one sensor and configured to interpret a downlink signal based on an output of the at least one sensor.
11. The downlink system of claim 108, wherein the downhole tool comprises a bottom hole assembly connected below the mud-powered downhole motor, and wherein the at least one sensor and the electronics package are disposed in the bottom hole assembly.
12. The downlink system of claim 11, further comprising a rotary steerable system disposed in the bottom hole assembly.
13. The downlink system of claim 12, wherein the at least one sensor is disposed in the rotary steerable system
14. The downlink system of claim 10, wherein the at least one sensor comprises a magnetometer.
15. The downlink system of claim 10, wherein the at least one sensor comprises an accelerometer.
16. The downlink system of claim 10, wherein the at least one sensor comprises a gyroscope.

17. The method of claim 10, wherein the mud-powered downhole motor comprises a positive displacement mud motor.
18. The method of claim 10, wherein the mud-powered downhole motor comprises a drilling mud turbine.